SUBMISSION TO ROYAL COMMISSION ON ENERGY
RE
CANADA-CALIFORNIA NATURAL GAS PIPELINE
BY
ALBERTA AND SOUTHERN GAS CO. LTD.

H Borden Exhibit - C-15-1

SUBMISSION TO ROYAL COMMISSION ON ENERGY

RE

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BY

ALBERTA AND SOUTHERN GAS CO. LTD.

INDEX

Alberta & Southern

14.48 field price

9.40 - (about ~~4½~~ 4½ cents on Trunk line)

4.2 ~~5.08~~ (about 2 ¢.)

~~29.56~~

41 at Antioch

32 at Oregon border of Calif

6½

14.48 - Gathering Price

9.40 - Alberta Trunk line charges plus 7½ % on its rate base

4.20 - S & T charges + 7½ on its rate base

28.08 ~~.68~~ metering by Alberta Trunk

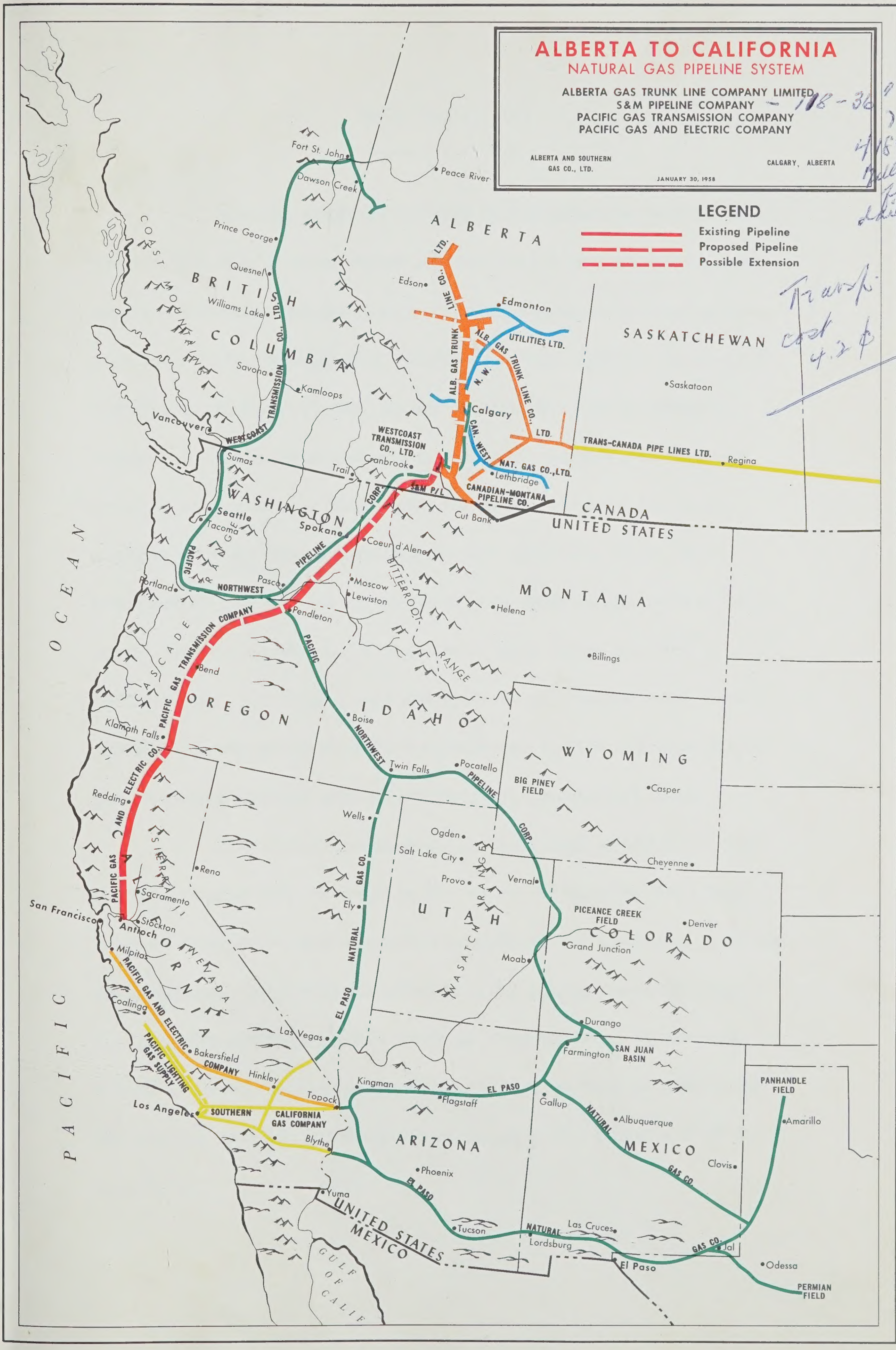
.68

28.76 - cost to take gas to U.S. border

6.50 - Total of 7½ % for both Alberta Trunk & S & T.

22.26

net estimated cost to U.S. border per mcf of gas without allowance for any profit to Alberta Trunk or S & T. Ltd.


ALBERTA TO CALIFORNIA
NATURAL GAS PIPELINE SYSTEM
ALBERTA GAS TRUNK LINE COMPANY LIMITED
S&M PIPELINE COMPANY
PACIFIC GAS TRANSMISSION COMPANY
PACIFIC GAS AND ELECTRIC COMPANY
ALBERTA AND SOUTHERN GAS CO., LTD.
CALGARY, ALBERTA
JANUARY 30, 1958
LEGEND
Existing Pipeline
Proposed Pipeline
Possible Extension
ALBERTA
BRITISH COLUMBIA
SASKATCHEWAN
WASHINGTON
OREGON
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
CALIFORNIA
NEVADA
ARIZONA
NEW MEXICO
CANADA
UNITED STATES
MEXICO
PACIFIC OCEAN
GULF OF CALIF
Fort St. John
Dawson Creek
Peace River
Prince George
Quesnel
Williams Lake
Savona
Kamloops
Vancouver
Edson
Edmonton
Calgary
Lethbridge
Saskatoon
Regina
Cranbrook
Trail
Sumas
Seattle
Tacoma
Spokane
Coeur d'Alene
Moscow
Lewiston
Pasco
Portland
Pendleton
Bend
Klamath Falls
Redding
Reno
Sacramento
San Francisco
Antioch
Stockton
Milpitas
Coalinga
Bakersfield
Hinkley
Las Vegas
Topock
Los Angeles
Blythe
Yuma
Phoenix
Tucson
Kingman
Flagstaff
Gallup
Albuquerque
Farmington
Durango
Lordsburg
Las Cruces
El Paso
Clovis
Amarillo
Jal
Odessa
Helena
Billings
Boise
Twin Falls
Pocatello
Wells
Ely
Ogden
Salt Lake City
Provo
Vernal
Moab
Grand Junction
Denver
Casper
Cheyenne
BIG PINEY FIELD
PICEANCE CREEK FIELD
SAN JUAN BASIN
PANHANDLE FIELD
PERMIAN FIELD
COAST MOUNTAINS
CASCADE RANGE
SIERRA NEVADA
BITTERROOT RANGE
WASATCH RANGE
WESTCOAST TRANSMISSION CO., LTD.
ALB. GAS TRUNK LINE CO. LTD.
N. W. UTILITIES LTD.
CAN. WEST. NAT. GAS CO., LTD.
TRANS-CANADA PIPE LINES LTD.
CANADIAN-MONTANA PIPELINE CO.
S&M P/L CORP.
PACIFIC GAS TRANSMISSION COMPANY
PACIFIC NORTHWEST PIPELINE CORP.
PACIFIC GAS AND ELECTRIC CO.
PACIFIC GAS AND ELECTRIC COMPANY
PACIFIC LIGHTING GAS SUPPLY
SOUTHERN CALIFORNIA GAS COMPANY
EL PASO NATURAL GAS CO.

INTRODUCTION

The planned 327 million dollar pipeline to transport natural gas 1,300 miles from Alberta fields to California customers is unusual in the history of long distance natural gas pipelines in North America: 1) Its principal sponsor is a retail distributor of natural gas, 2) the distributor has an existing market -- rather than merely a potential market which would require promotion or development, 3) the sponsor has contracted with the major public utilities operating in the area from which gas will be supplied to give such utilities first call on the gas purchased for the project, and 4) the sponsor is seeking only one thing -- an adequate supply based upon direct purchase from producers in the field and thence transported by the most economical and direct route to its market area.

The sponsors seek no promotional profit by virtue of their controlling interest in the equity of the pipeline; they seek to acquire no new market areas from the proposed pipeline construction; they seek no subsidy from government to finance the project; and finally they seek no subsidy from producers, either in lower prices or in the form of a waiting period while the normal market build-up takes place at the outlet end of the pipeline.

THE PROJECT

SPONSORS:

1. Pacific Gas and Electric Company (P. G. and E.) which is by most standards the largest privately owned gas and electric utility in the United States, with a service area encompassing most of northern and central California (the principal sponsor).

2. Canadian Western Natural Gas Company Limited of Calgary (Canadian Western), and Northwestern Utilities, Limited of Edmonton (Northwestern), the major gas distributing utilities in the Province of Alberta.

3. Canadian Bechtel Limited of Toronto, and Bechtel Corporation of San Francisco, international engineering and construction organizations which specialize in long distance pipelines. They will provide engineering and construction management for the project.

4. McLeod, Young, Weir & Company Limited and Dominion Securities Corpn. Limited of Toronto,

and Blyth & Co., Inc. of San Francisco, leading investment bankers, which will arrange for financing of the project.

5. The Montana Power Company, whose subsidiary, Canadian-Montana Pipe Line Company will purchase approximately 6-2/3% of the gas to be exported.

MARKETS:

There are two principal markets for the gas in this project. There is the market in the Province of Alberta, which is served by Canadian Western and Northwestern, the gas requirements of which are guaranteed by the agreement between them and Alberta and Southern Gas Co. Ltd. (Alberta and Southern). (The advantages of this agreement are described at page 20 of this submission).

Second, there is the large northern and central California market served by P.G. and E. P.G. and E. has been distributing natural gas since 1929. At the present time it serves in excess of 1,500,000 gas customers. Its peak daily sendout during the current winter season was 1.76 billion cubic feet of gas. Growth trends in northern California population and industry indicate that present requirements will increase

by an additional 450 million cubic feet per day by 1961, with a continued growth of approximately 100 million cubic feet per day each year thereafter.

The rate of consumption of Canadian gas in California will not be subject to sharp seasonal fluctuations as in the local Canadian market. This relatively constant rate of consumption guarantees a high, i.e. 90 per cent or better, average annual load factor for the proposed Canada to California project.

California is the most logical remaining market within economic reach of surplus Canadian natural gas. This becomes apparent when it is realized that the Trans-Canada and Westcoast systems will serve eastern Canada, the Pacific Northwest and possibly the midwestern United States.

P.G. and E. now supplies its customers from California fields, and from El Paso Natural Gas Company which transports gas from the southwest Unites States. In fact, roughly two-thirds of P.G. and E.'s total gas supply comes from El Paso. El Paso's system is the only out-of-state system serving the California market.

P.G. and E. considers it most important that an additional gas supply be provided for California from a new source, by means of a pipeline which is independent of its present principal supplier.

SCHEDULE:

Conditional upon obtaining necessary governmental permits and authorizations from the Alberta Oil and Gas Conservation Board, the Board of Transport Commissioners, the Department of Trade and Commerce, the United States Federal Power Commission and the California Public Utilities Commission, construction can start early in 1959, with completion scheduled for late 1960. An application by Alberta and Southern is now pending before the Alberta Oil and Gas Conservation Board.

ROUTE AND CAPACITY:

The pipeline will begin approximately 120 miles northwest of Edmonton in the Windfall area, following a southerly direction along the foothills. Before crossing the Rockies via Crowsnest Pass it will connect with the tap line to Montana. The transmission line will cross the international boundary near Kingsgate, British Columbia, run southwest through Idaho, Washington, Oregon and California and terminate at Antioch, California. Over 1, 300 miles will be spanned by the transmission line.

Thirty-inch outside diameter pipe will be used from the Windfall area to Rimbey, Alberta. From Rimbey to Antioch, California, 36-inch outside diameter pipe will be used. The transmission line will have an initial design capacity of 420 million cubic feet per day, while the capacity of the Montana tap line will be 30 million cubic feet. The design of the pipeline will permit economic enlargement of the capacity, as may be justified by the supply of gas, to over 800 million cubic feet per day merely by increasing compressor facilities. Utilization of such enlarged capacity would decrease the cost of gas transmission approximately 10¢ per 1,000 cubic feet. over the length of the pipe line

CAPITAL EXPENDITURE:

Canadian Section	$ 136,000,000
United States Section	$ 191,000,000

ANNUAL OPERATING COSTS:

Canadian Section (including purchase of gas)	$ 46,600,000
United States Section	$ 29,200,000

CORPORATE FUNCTIONS:

1. Alberta and Southern, a company incorporated under the Companies Act of the Province of Alberta, will be the purchaser of the natural gas in Alberta.

2. The Alberta Gas Trunk Line Company Limited will own and operate the transmission facilities within Alberta through which the gas purchased by Alberta and Southern will be transported from the various fields to a point in the vicinity of Coleman, Alberta.

3. The Montana Power Company through its subsidiary, Canadian-Montana Pipe Line Company, will receive approximately 30 million cubic feet of the gas per day at the point of interconnection with the project in Alberta.

4. S & M Pipeline Limited (S & M), a company incorporated by Special Act of the Parliament of Canada, will construct, own and operate the section of the pipeline extending from Coleman to the international boundary. Alberta and Southern has entered into an agreement with S & M providing for the transportation of the gas through this section of pipeline.

5. Pacific Gas Transmission Company (P.G.T.) a company incorporated under the laws of the State of California, will construct, own and operate the section of pipeline extending from the international boundary to the Oregon-California border. Alberta and Southern has entered into an agreement for the sale of the gas to P.G.T. at the international boundary.

S.F. Paper

6. P.G. and E. will purchase the gas from P.G.T. at the California-Oregon border, and will construct, own and operate the section of pipeline extending from that point to the Antioch terminal.

FINANCING:

Public financing has been planned for three of the above named companies, i.e., P.G. and E., P.G.T. and S & M. The capital requirements of Alberta and Southern will be nominal. The Alberta Gas Trunk Line Company Limited will plan and arrange for its own financing.

It is contemplated that both S & M and P.G.T. will have capital structures consisting of 75% mortgage bonds and

term bank loans and 25% equity capitalization. No securities will be issued to individuals for services or for promotional activities. All securities will be issued against actual expenditures only. At the time of the public offering of the securities, the original investors will pay the same price as the public, less the actual underwriting commission and expenses.

With respect to S & M, 49% of the common capital stock of this company, in addition to mortgage bonds and bank loans, will be offered in the first instance to Canadian investors, with the balance of the stock being taken up by P. G. T.

With respect to Pacific Gas Transmission Company, P. G. and E. will own 50% of the common stock of this company and 25% will be owned by the other original investors -- Blyth 7½% & Co., Inc., Canadian 9½% Bechtel Limited, Canadian 7½% Western, Northwestern and The Montana 2½% Power Company. The remaining 25% of the stock will be offered to Canadian citizens through McLeod, Young, Weir & Company Limited and Dominion Securities Corpn. Limited and to American citizens through Blyth & Co., Inc.

The California portion of the pipeline will constitute a part of P. G. and E.'s general construction program, and will be financed in accordance with its normal practice.

In the opinion of McLeod, Young, Weir & Company Limited, Dominion Securities Corpn. Limited and Blyth & Co., Inc., the project is financially feasible.

RESERVES AND CONTRACTS:

Alberta and Southern has entered into firm contracts with producers which provide for a total daily delivery quantity of 491 million cubic feet of gas to be produced from the following fields. (The fields are listed in geographical order, running from north to south within the province):

Paddle River

Pembina

Minnehik-Buck Lake

Dick Lake (South Westerose) *

Homeglen-Rimbey

Crossfield

Sarcee

Pine Coulee

Castle River

Waterton

* (Daily delivery quantity assumed to be 100 million cubic feet pending operator's decision on size of processing plant).

These commitments involve contracts with a majority of the major producers in southwestern and central western Alberta (see Schedule A attached). The contract obligations become effective after all regulatory permits are obtained. Term of the agreements is twenty-five years. Price to producers, for other than Pembina oil field gas, commences at 13-1/2¢ per thousand cubic feet, increases to 14-1/2¢ on July 1, 1961 and escalates upward to 21¢ in 1983. Provision is made for price re-opening in 1968 and every five years thereafter. 124 [illegible]

In addition, Alberta and Southern has entered into option agreements under which the Company will be entitled to purchase additional gas developed from the holdings of Imperial Oil, Shell Oil and California Standard, in the general area west of the fifth meridian and south of the Athabasca River. Option agreements have also been entered into with other companies covering the following specific fields or areas:

Whitecourt area (including Windfall and Pine Creek)

Virginia Hills and Alhambra holdings of Mobil Oil.

All of the option commitments are for a period of five years or more. They represent areas of considerable promise for future development. The extent of this development will be

directly related to the creation of an export market. Under all of the option agreements (but not including the firm contracts referred to above) reserves totalling 7,714 billion cubic feet could be dedicated to the project.

With respect to the firm contracts, the Company's consultant, Mr. Ralph E. Davis, has estimated the proven and probable reserves from the fields under firm contracts to total 4,799 billion cubic feet of which 3,849 billion are expected to be available to Alberta and Southern (see Schedule A attached). No attempt has been made to make reserve estimates applicable to the general option areas from Imperial Oil, Shell Oil and California Standard referred to above, nor from the following fields covered by specific options:

Virginia Hills

Alhambra

Beaver Creek

However, reserve estimates have been made on the following fields or areas under option, totalling 701 billion cubic feet:

Olds

Windfall

Pine Creek

AVAILABILITY FOR EXPORT:

With respect to the reserves of the Province of Alberta, the Company's consultant on November 5, 1957 completed a report as of July 1, 1957, showing disposable reserves of 20.8 trillion cubic feet. Many recent discoveries were not evaluated, however (including the Central Foothills area, Paddle River and others). Using the foregoing estimate, which is admittedly conservative, there is estimated disposable natural gas in the province of some 7.3 trillion cubic feet in excess of provincial requirements and authorized export (see Schedule B attached). The Company seeks to export 4.2 trillion cubic feet over a 25-year period.

Presumably present export authorizations to other provinces in Canada are based upon present requirements or requirements as estimated at the time such export permits were originally obtained. Alberta and Southern recognizes the prospect of future growth in the demand for gas in Canada. At the same time recognition should also be given to the continuing trend of growth in proven reserves in the western provinces, and it is sound policy to project reserve increases over the same time period used to calculate market requirements.

In other words, if the future market demand for gas in Canada is estimated by extrapolating the current market demand to 1970 or 1980, it logically follows that similar recognition should be given to the rate of discovery of new gas reserves and its resulting effect during the same years. Indeed, the rate of discovery and additions to reserves in the future -- with the stimulus that will come from an additional high load factor export market outlet -- should be much higher than the rate of discovery that has to date been largely incidental to the search for oil.

Actually all Canadian markets will benefit directly from the approval of our project:

1. Presently authorized export projects offer no particular stimulus to exploration and development in the foothills belt.

2. The western foothills belt is the area of great promise.

3. If our project is approved it is our judgment that the producers will take immediate steps to develop that area in such a way that there will be a material surplus over Alberta requirements and those of our project -- all to the benefit of Canadian markets.

ECONOMIC BENEFITS

STIMULUS TO EXPLORATION AND PRODUCTION:

1. The project will provide the shortest connection to the largest established market within economic reach of surplus Alberta gas.

2. The purchase of gas for the project makes available to the producers a net revenue which after deduction of royalty payments will be on the order of $20 million annually.

3. Natural gas development resulting from commitments to the project will stimulate Alberta producers to expend millions of dollars to develop gas properties. This pattern can be repeated many times by producers large and small, but it will not occur without the prospect of an immediate market outlet of this scope.

4. A large volume, high load factor project of this kind is essential to the efficient production of the gas fields as compared to a smaller project or a project with a lower load factor.

BENEFITS TO CANADA:

A firm substantial export market will be required to provide the necessary stimulus to develop a healthy natural gas industry in Canada. This was substantiated by the report of the Gordon Commission. Such an export market would be completely assured by the Canada to California project.

Hu Harries and Associates of Edmonton have prepared a study for Alberta and Southern showing the major economic effects of the project on the Alberta economy. The approach used has been to estimate effects on the income of Albertans for the period 1958-65, ignoring income already generated by well drilling, etc. in anticipation of eventual export. Gross income effects have been related to specific sectors of the economy. Although the study is oriented in Alberta, it presents merely specific illustrations of benefits which would accrue in varying degree throughout Canada. Obviously many of the products to be sold and consumed in Alberta, as a result of the economic stimulation provided by the project, will have to be obtained from other provinces of Canada. Similarly, much of the income earned by Albertans will be spent in other provinces.

The results of the study may be summarized as follows:

1. The pipeline companies will spend \$327 million in construction of the pipeline, \$96 million of it in Alberta and \$38 million in British Columbia. Producers will spend over \$234 million to make gas available for export, during the period 1958-65.

2. Additional income generated within the province in the period will total \$554.2 million. This is equivalent to \$61.68 per year for every man, woman and child now in the province, or to \$228.22 per year for every family, for the next eight years.

3. Additional employment opportunities will be created by the project, both directly and indirectly. Aside from temporary jobs in construction of the line and plants, etc. there will be the following permanent increase in employment:

Pipeline system	100
Producing companies	1,000
Indirect	8,900
	10,000

4. Retail sales will increase by a total of $304 million over the period, an average of $38 million per year.

5. Housing for permanent employees and their dependents, an estimated total of 30,000 persons, will require construction of 7,000 to 8,000 homes with an estimated value of $60 million to $70 million, excluding land.

6. Provincial government revenues from gas royalties alone will be increased by $18.7 million over the 1958-65 period. This overlooks any receipts from sale of gas rights or taxes, and thus is a minimum estimate of benefits accruing to the provincial treasury.

7. The trunk collecting and transmission lines within Alberta will be built by The Alberta Gas Trunk Line Company Limited. Residents who hold many of the shares of this company will benefit as a result of the enlarged scope of its operations.

Additional specific benefits which such a project will confer on Canada may be summarized as follows:

8. Annual net payments of a minimum of $23 million flowing from the United States to Canada (remaining after adjusting for payments from Canada to U.S.) will aid in correcting the balance of trade between the countries.

9. During construction of the pipeline system, 1,300 jobs will be provided in Canada for two construction seasons with a total payroll amounting to $12.5 million.

10. The project will provide the Canadian public with an opportunity to participate in the financing of a natural resource project consistent with the following conditions:

    a) The guaranteed market and high load factor makes the project readily attractive to financing by private capital.

    b) No financial assistance will be sought from either the Government of Alberta or the Government of Canada.

c) There will be no opportunity for the sponsors to purchase shares at a substantial discount below the offering market price.

BENEFITS TO GAS CONSUMERS OF ALBERTA:

The sponsors of the project have recognized the primary importance of providing for the future requirements of the Province of Alberta. As previously stated, an agreement has been entered into by Alberta and Southern and Canadian Western and Northwestern, which will have the following beneficial results:

1. A long-term gas supply is provided at an advantageous price.

2. The Alberta Utilities will have first call on the gas which is purchased for the project.

3. There is a minimization of the necessity of large future expenditures on construction of transmission facilities solely for local needs.

4. Provision is made for standby facilities to supplement local systems on occasions of shut-down.

CONCLUSION

The features which make this project desirable for Canada may be summarized as follows:

1. The project makes available substantial quantities of additional gas for consumers within Alberta, and assures the people of Alberta that they will have complete protection for their present and future gas requirements.

2. The firm, guaranteed high load factor market makes the project readily financeable by private capital and provides an investment opportunity for the Canadian public.

3. The purchase price for gas offers a fair and compensatory return for this Canadian resource, and substantial financial benefits to Canada.

4. The project will provide immediate and pronounced economic benefits to Canada through the further development of a strong natural gas industry and the many allied industries.

5. The principal sponsor has no conflicts or commitments which would interfere with a planned increase in export consistent with the amount of gas available in Alberta, the willingness of the Provincial and Dominion governments to permit its export and the growth of the California market.

6. The project will stimulate exploration for natural gas with an expected result that additional proven reserves will be added to the energy resources of Canada.

Respectfully submitted

ALBERTA AND SOUTHERN GAS CO. LTD.

Original Signed By:

By: J. K. HORTON

President

SCHEDULE A

ALBERTA AND SOUTHERN GAS CO. LTD.

ESTIMATED REMAINING RECOVERABLE PIPELINE GAS RESERVES OF CERTAIN ALBERTA FIELDS

As of July 1, 1957

(All volumes expressed in Billion Cubic Feet at 14.4 psia and 60° F.)

	Total Field Reserves - M^3cf			Estimated will be available to Alberta and Southern			Now under commitment to Alberta and Southern	
Fields under commitment to Alberta and Southern	(1) Proven	(2) Probable	(3) Total	(4) Proven	(5) Probable	(6) Total	% of (3)	% of (6)
Crossfield	253.5	180.6	434.1	253.5	180.6	434.1	81	81
Dick Lake (South Westerose) *1	1,000.0	300.0	1,300.0	892.0	268.0	1,160.0	84	95
Homeglen-Rimbey	948.0	--	948.0	145.3	--	145.3	16	100
Minnehik-Buck Lake *2	163.0	87.0	250.0	163.0	87.0	250.0	40	40
Paddle River *3	46.0	20.0	66.0	40.8	17.7	58.5	89	100
Pembina *4	302.2	--	302.2	302.2	--	302.2	80	80
Pine Coulee	15.9	31.8	47.7	15.9	31.8	47.7	100	100
Sarcee	189.6	291.2	480.8	189.6	291.2	480.8	88	88
Waterton-Castle River	130.0	840.0	970.0	130.0	840.0	970.0	81	81
TOTAL	3,048.2	1,750.6	4,798.8	2,132.3	1,716.3	3,848.6		

Notes: *1 - Leduc D-3 zone.

*2 - Reserves being re-evaluated - this is preliminary figure.

* 3 - Nordegg zone only. Mississippian being evaluated.

*4 - Residue gas expected to be available 1959-77 from Cardium zone oil production. Mississippian and Belly River zones not considered.

Fields or areas in option agreements to Alberta and Southern for which reserve estimates have been made	(1) Proven	(2) Probable	(3) Total	(4) Proven	(5) Probable	(6) Total
Olds	68.4	137.1	205.5	68.4	137.1	205.5
Windfall	258.0	--	258.0	258.0	--	258.0
Pine Creek	119.0	119.0	238.0	119.0	119.0	238.0
TOTAL	445.4	256.1	701.5	445.4	256.1	701.5
GRAND TOTAL	3,493.6	2,006.7	5,500.3	2,577.7	1,972.4	4,550.1

SCHEDULE B

GAS RESERVES AND REQUIREMENTS IN THE PROVINCE OF ALBERTA AND AUTHORIZED GAS EXPORTS FROM THE PROVINCE OF ALBERTA

		Billions of Cubic Feet (14.4 psia)
Estimated disposable natural gas reserves of the Province of Alberta at July 1, 1957		20,849
Total requirements for natural gas in the Province of Alberta for the 30 year period 1957 - 1986		7,609
Total requirements of existing permits for the export of natural gas from the Province of Alberta		
Total authorized withdrawal	5,980 BCF	
Withdrawal to July 1, 1957	66 "	
Balance of authorized withdrawal as of July 1, 1957		5,914
Estimated disposable natural gas in the Province of Alberta in excess of the requirements of the Province of Alberta and existing permits for the export of natural gas from the Province of Alberta		7,326